SEQUENCE LISTING

<110> AquaBio Product Sciences, LLC
      Harris, H. William, Jr.
      Russell, David R.
      Nearing, Jacqueline
      Betka, Marlies

<120> Methods for Raising Pre-Adult Anadromous
  Fish

<130> 2213.1004-000

<140> US 09/687,477
<141> 2000-10-12

<160> 23

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 594
<212> DNA
<213> Atlantic Salmon

<400> 1
cttggcatta tgctctgtgc tgggggtatt cttgacagca ttcgtgatgg gagtgtttat 60
caaatttcgc aacaccccaa ttgttaaggc cacaaacaga gagctatcct acctcctcct 120
gttctcactc atctgctgtt tctccagttc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctggtaaaa actaaccgag tacttctagt gttcgaagcc aagatcccca ccagtctcca 300
tcgtaagtgg tgggggctaa acttgcagtt cctgttagtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctccg gcgagctaca ggaaccatga 420
cattgatgag ataattttca ttacatgcaa tgagggctct atgatggcgc ttggcttcct 480
aattgggtac acatgcctgc tggcagccat atrcttcttc tttgcattta aatcacgaaa 540
actgccagag aactttactg aggctaagtt catcaccttc agcatgctca tctt 594

<210> 2
<211> 199
<212> PRT
<213> Atlantic Salmon

<220>
<223> Xaa=any amino acid

<400> 2
```
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Ala Phe Val Met
 1               5                  10                  15
Gly Val Phe Ile Lys Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20                  25                  30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35                  40                  45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
    50                  55                  60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65                  70                  75                  80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85                  90                  95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100                 105                 110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
        115                 120                 125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Xaa Asp Glu
    130                 135                 140
Ile Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe
145                 150                 155                 160
Leu Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Xaa Phe Phe Phe Ala
            165                 170                 175
Phe Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile
            180                 185                 190
Thr Phe Ser Met Leu Ile Phe
            195
```

<210> 3
<211> 594
<212> DNA
<213> Artic Char

<400> 3
```
cttggcatta tgctctgtgc tgggggtatt cttgacagca ttcgtgatgg gagtgtttat 60
cagatttcgc aacaccccaa ttgttaaggc cacaaacaga gagctatcct acctcctcct 120
gttctcactc atctgctgtt tctccagctc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctggtcaaa actaaccgag tacttctagt gttcgaagcc aagatccccca ccagtctcca 300
tcgtaagtgg tggggggctaa acttgcagtt cctgttggtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctccg gcgagctaca ggaaccatga 420
cattgatgag ataattttca ttacatgcaa tgagggctct atgatggcgc tcggcttcct 480
aattgggtac acatgcctgc tggcagccat atgcttcttc tttgcattta aatcacgaaa 540
actgccagag aactttaccg aggctaagtt catcaccttc agcatgctca tctt        594
```

<210> 4
<211> 199
<212> PRT
<213> Artic Char

<220>
<223> Xaa = Any amino acid

<400> 4
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Ala Phe Val Met
 1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
    50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
            85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
    115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Xaa Asp Glu
    130   135   140
Ile Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe
145   150   155   160
Leu Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala
                165   170   175
Phe Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile
        180   185   190
Thr Phe Ser Met Leu Ile Phe
        195

<210> 5
<211> 593
<212> DNA
<213> Trout

<400> 5
ttggcattat gctctgtgct gggggtattc ttgacagtat tcgtgatggg agtgtttatc 60
agatttcgca acaccccaat tgttaaggcc acaaacagag agctatccta cctcctcctg 120
ttctcactta tctgctgttt ctccagctcc ctcatcttca ttggtgaacc ccaggactgg 180
acatgccgtc tacgccagcc tgcattcggg ataagttttg ttctctgcat ctcctgcatc 240
ctggtcaaaa ctaaccgagt acttctagtg ttcgaagcaa agatccccac cagtctccat 300
cgtaagtggt gggggctaaa cttgcagttc ctgttggtgt tcctgttcac atttgtgcaa 360
gtgatgatat gtgtggtctg gctttacaat gctcctccgg cgagctacag gaaccatgac 420
attgatgaga tcattttcat tacatgcaat gagggctcta tgatggcgct tggcttccta 480
attgggtaca catgcctgct ggcagccata tgcttcttct ttgcatttaa atcacgaaaa 540
ctgccagaga attttaccga ggctaagttc atcaccttca gcatgctcat ctt 593

<210> 6
<211> 199
<212> PRT
<213> Trout

<220>
<223> Xaa = Any amino acid

<400> 6
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Val Phe Val Met
 1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
                20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
            35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
        50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
        115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Xaa Asp Glu
    130   135   140
Ile Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe
145   150   155   160
Leu Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala
            165   170   175
Phe Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile
            180   185   190
Thr Phe Ser Met Leu Ile Phe
            195

<210> 7
<211> 594
<212> DNA
<213> Chum Salmon

<400> 7
```
cttggcatta tgctctgtgc tggggtatt cttgacagca ttcgtgatgg gagtgtttat 60
cagatttcgc aacaccccaa ttgttaaggc cacaaacaga gagctatcct acctcctcct 120
gttctcactt atctgctgtt tttccagctc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctggtcaaa actaaccgag tacttctagt gttcgaagca aagatcccca ccagtctcca 300
tcgtaagtgg tggggctaa acttgcagtt cctgttggtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctccg gcgagctaca ggaaccatga 420
cattgatgag atcattttca ttacatgcaa tgagggctct atgatggcgc ttggcttcct 480
aattgggtac acatgcctgc tggcagccat atgcttcttc tttgcattta aatcacgaaa 540
actgccagag aattttaccg aggctaagtt catcaccttc agcatgctca tctt 594
```

<210> 8
<211> 197
<212> PRT
<213> Chum Salmon

<400> 8
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Ala Phe Val Met
1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
    50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
        115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Asp Glu Ile
    130   135   140
Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe Leu
145   150   155   160
Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala Phe
                165   170   175
Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile Thr
            180   185   190
Phe Ser Met Leu Ile
            195

<210> 9
<211> 594
<212> DNA
<213> Coho Salmon

<400> 9
cttggcatta tgctctgtgc tggggggtatt cttgacagya ttcgtgatgg gagtgtttat 60
cagatttcgc aacaccccaa ttgttaaggc cacaaacaga gagctatcct acctcctcct 120
gttctcactt atctgctgtt tctccagctc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctggtcaaa actaaccgag tacttctagt gttcgaagca aagatcccca ccagtctcca 300
tcgtaagtgg tggggctaa acttgcagtt cctgttggtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctccg gcgagctaca ggaaccatga 420
cattgatgag atcattttca ttacatgcaa tgagggctct atgatggcgc ttggcttcct 480
aattgggtac acatgcctgc tggcagccat atgcttcttc tttgcattta aatcacgaaa 540
actgccagag aattttacmg aggctaagtt catcaccttc agcatgctca tctt   594

<210> 10
<211> 197
<212> PRT
<213> Coho Salmon

<220>
<223> Xaa= Any Amino Acid

<400> 10
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Xaa Phe Val Met
 1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
    50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
        115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Asp Glu Ile
    130   135   140
Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe Leu
145   150   155   160
Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala Phe
            165   170   175
Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile Thr
        180   185   190
Phe Ser Met Leu Ile
        195

<210> 11
<211> 594
<212> DNA
<213> King Salmon

<400> 11
```
cttggcatta tgctctgtgc tgggggtatt cttgacagca ttcgtgatgg gagtgtttat  60
cagatttcgc aacaccccaa ttgttaaggc cacaaacaga gagctatcct acctcctcct 120
gttctcactt atctgctgtt tttccagctc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctagtcaaa actaaccgag tacttctagt gttcgaagca aagatcccca ccagtctcca 300
tcgtaagtgg tgggggctaa acttgcagtt cctgttggtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctcca gcgagctaca ggaatcatga 420
cattgatgag atcattttca ttacatgcaa tgagggctct atgatggcgc ttggcttcct 480
aattgggtac acgtgcctgc tggcagccat atgcttcttc tttgcattta aatcacgaaa 540
actgccagag aattttaccg aggctaagtt cattaccttc agcatgctca tctt         594
```

<210> 12
<211> 197
<212> PRT
<213> King Salmon

<400> 12
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Ala Phe Val Met
 1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
             20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
         35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
     50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                 85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
             100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
         115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Asp Glu Ile
     130   135   140
Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe Leu
145   150   155   160
Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala Phe
                 165   170   175
Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile Thr
             180   185   190
Phe Ser Met Leu Ile
         195

<210> 13
<211> 594
<212> DNA
<213> Pink Salmon

<400> 13
cttggcatta tgctctgtgc tgggggtatt cttgacagct ttcgtgatgg gagtgtttat 60
cagatttcgc aacaccccaa ttgttaaggc cacaaacaga gagctatcct acctcctcct 120
gttctcactt atctgctgtt tttccagctc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctggtcaaa actaaccgag tacttctagt gttcgaagca agatccccca ccagtctcca 300
tcgtaagtgg tggggctaa acttgcagtt cctgttggtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctccg gcgagctaca ggaaccatga 420
cattgatgag atcatttca ttacatgcaa tgagggctct atgatggcgc ttggcttcct 480
aattgggtac acatgcctgc tggcagccat atgcttcttc tttgcattta aatcacgaaa 540
actgccagag aattttactg aggctaagtt catcaccttc agcatgctca tctt 594

<210> 14
<211> 197
<212> PRT
<213> Pink Salmon

<400> 14
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Ala Phe Val Met
 1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
    50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
        115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Asp Glu Ile
    130   135   140
Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Leu Gly Phe Leu
145   150   155   160
Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala Phe
            165   170   175
Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile Thr
            180   185   190
Phe Ser Met Leu Ile
            195

<210> 15
<211> 594
<212> DNA
<213> Sockeye Salmon

<400> 15
cttggcatta tgctctgtgc tgggggtatt cttgacagca ttcgtgatgg gagtgtttat 60
cagatttcgc aacaccccaa ttgttaaggc cacaaacaga gaactatcct acctcctcct 120
gttctcactt atctgctgtt tttccagctc cctcatcttc attggtgaac cccaggactg 180
gacatgccgt ctacgccagc ctgcattcgg gataagtttt gttctctgca tctcctgcat 240
cctagtcaaa actaaccgag tacttctagt gttcgaagca aagatcccca ccagtctcca 300
tcgtaagtgg tgggggctaa acttgcagtt cctgttggtg ttcctgttca catttgtgca 360
agtgatgata tgtgtggtct ggctttacaa tgctcctcca gcgagctaca ggaatcatga 420
cattgatgag ataattttca ttacatgcaa tgagggctct atgatggcgy ttggcttcct 480
aattgggtac acgtgcctgc tggcagccat atgcttcttc tttgcattta aatcacgaaa 540
actgccagag aattttacag aggctaagtt catcaccttc agcatgctca tctt   594

<210> 16
<211> 197
<212> PRT
<213> Sockeye Salmon

<220>
<223> Xaa=Any Amino Acid

<400> 16
Leu Ala Leu Cys Ser Val Leu Gly Val Phe Leu Thr Ala Phe Val Met
 1   5   10   15
Gly Val Phe Ile Arg Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20   25   30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35   40   45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Gln Asp Trp Thr Cys Arg Leu
    50   55   60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65   70   75   80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85   90   95
Thr Ser Leu His Arg Lys Trp Trp Gly Leu Asn Leu Gln Phe Leu Leu
            100   105   110
Val Phe Leu Phe Thr Phe Val Gln Val Met Ile Cys Val Val Trp Leu
    115   120   125
Tyr Asn Ala Pro Pro Ala Ser Tyr Arg Asn His Asp Ile Asp Glu Ile
    130   135   140
Ile Phe Ile Thr Cys Asn Glu Gly Ser Met Met Ala Xaa Gly Phe Leu
145   150   155   160
Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala Phe
            165   170   175
Lys Ser Arg Lys Leu Pro Glu Asn Phe Thr Glu Ala Lys Phe Ile Thr
            180   185   190
Phe Ser Met Leu Ile
        195

<210> 17
<211> 4134
<212> DNA
<213> Dogfish Shark

<400> 17
```
aattccgttg ctgtcggttc agtccaagtc tcctccagtg caaaatgaga aatggtggtc 60
gccattacag gaacatgcac tacatctgtg ttaatgaaat attgtcagtt atctgaaggt 120
tattaaaatg tttctgcaag gatggcttca cgagaaatca attctgcacg ttttcccatt 180
gtcattgtat gaataactga ccaaagggat gtaacaaaat ggaacaaagc tgaggaccac 240
gttcacccct tcttggagca tacgatcaac cctgaaggag atggaagact tgaggaggaa 300
atggggattg atcttccagg agttctgctg taaagcgatc cctcaccatt acaaagataa 360
gcagaaatcc tccaggcatc ctctgtaaac gggctggcgt agtgtggctt ggtcaaggaa 420
cagagacagg gctgcacaat ggctcagctt cactgccaac tcttattctt gggatttaca 480
ctcctacagt cgtacaatgt ctcagggtat ggtccaaacc aaagggccca gaagaaagga 540
gacatcatac tggaggtct cttcccaata cactttggag tagccgccaa ggatcaggac 600
ttaaaatcga accggaggc gacaaatgt attcggtaca attttcgagg cttccgatgg 660
ctccaggcga tgatattcgc aattgaagag attaacaaca gtatgacttt cctgcccaat 720
atcaccctgg gatatcgcat atttgacacg tgtaacaccg tgtccaaggc gctagaggca 780
acactcagct ttgtggccca gaacaaaatc gactcgctga acttagatga gttctgtaac 840
tgctctgacc atatcccatc cacaatagca gtggtcgggg caaccgggtc aggaatctcc 900
acggctgtgg ccaatctatt gggattattt tacattccac aggtcagcta tgcctcctcg 960
agcaggctgc tcagcaacaa gaatgagtac aaggccttcc tgaggaccat ccccaatgat 1020
gagcaacagg ccacggccat ggccgagatc atcgagcact ccagtggaa ctgggtggga 1080
accctggcag ccgacgatga ctatggccgc ccaggcattg acaagttccg ggaggaggcc 1140
gttaagaggg acatctgtat tgacttcagt gagatgatct ctcagtacta cacccagaag 1200
cagttggagt tcatcgccga cgtcatccag aactcctcgg ccaaggtcat cgtggtcttc 1260
tccaatggcc ccgacctgga gccgctcatc caggagatag ttcggagaaa catcaccgat 1320
cggatctggc tggccagcga ggcttgggcc agctcttcgc tcattgccaa gccagagtac 1380
ttccacgtgg tcggcggcac catcggcttc gctctcaggg cggggcgtat cccagggttc 1440
aacaagttcc tgaaggaggt ccacccccagc aggtcctcgg acaatgggtt tgtcaaggag 1500
ttctgggagg agaccttcaa ctgctacttc accgagaaga ccctgacgca gctgaagaat 1560
tccaaggtgc cctcgcacgg accggcggct caaggggacg gctccaaggc ggggaactcc 1620
agacggacag ccctacgcca cccctgcact ggggaggaga acatcaccag cgtggagacc 1680
ccctacctgg attatacaca cctgaggatc tcctacaatg tatacgtggc cgtctactcc 1740
attgctcacg ccctgcaaga catccactct tgcaaacccg gcacgggcat ctttgcaaac 1800
ggatcttgtg cagatattaa aaaagttgag gcctggcagg tcctcaacca tctgctgcat 1860
ctgaagtttta ccaacagcat gggtgagcag gttgactttg acgatcaagg tgacctcaag 1920
gggaactaca ccattatcaa ctggcagctc tccgcagagg atgaatcggt gttgttccat 1980
gaggtgggca actacaacgc ctacgctaag cccagtgacc gactcaacat caacgaaaag 2040
aaaatcctct ggagtggct ctccaaagtg gttcctttct ccaactgcag tcgagactgt 2100
gtgccgggca ccaggaaggg gatcatcgag ggggagccca cctgctgctt tgaatgcatg 2160
gcatgtgcag agggagagtt cagtgatgaa aacgatgcaa gtgcgtgtac aaagtgcccg 2220
aatgatttct ggtcgaatga gaaccacacg tcgtgcatcg ccaaggagat cgagtacctg 2280
tcgtggacgg agcccttcgg gatcgctctg accatcttcg ccgtactggg catcctgatc 2340
acctccttcg tgctgggggt cttcatcaag ttcaggaaca ctcccatcgt gaaggccacc 2400
aaccgggagt gtgtcctacct gctgctcttc tccctcatct gctgcttctc cagctcgctc 2460
atcttcatcg gcgagcccag ggactggacc tgtcggctcc gccaaccggc ctttggcatc 2520
agcttcgtcc tgtgcatctc ctgcatcctg gtgaagacca accgggtgct gctggtcttc 2580
gaggccaaga tccccaccag cctccaccgc aagtgggtgg gcctcaacct gcagttcctc 2640
ctggtcttcc tctgcatcct ggtgcaaatc gtcacctgca tcatctggct ctacaccgcg 2700
cctccctcca gctacaggaa ccatgagctg gaggacgagg tcatcttcat cacctgcgac 2760
gagggctcgc tcatggcgct gggcttcctc atcggctaca ctgcctcct cgccgccatc 2820
tgcttcttct tcgccttcaa gtcccgtaag ctgccggaga cttcaacga ggctaagttc 2880
atcaccttca gcatgttgat cttcttcatc gtctggatct ccttcatccc cgcctatgtc 2940
agcacctacg caagtttgt gtcggccgtg gaggtgattg ccatcctggc ctccagcttc 3000
gggctgctgg ctgcatttta cttcaacaag tgttacatca tcctgttcaa gccgtgccgt 3060
aacaccatcg aggaggtgcg ctgcagcacg gcggcccacg ccttcaaggt ggcggcccgg 3120
gccaccctcc ggcgcagcgc cgcgtctcgc aagcgctcca gcagcctgtg cggctccacc 3180
```

```
atctcctcgc ccgcctcgtc cacctgcggg ccgggcctca ccatggagat gcagcgctgc 3240
agcacgcaga aggtcagctt cggcagcggc accgtcaccc tgtcgctcag cttcgaggag 3300
acaggccgat acgccaccct cagccgcacg gcccgcagca ggaactcggc ggatggccgc 3360
agcggcgacg acctgccatc tagacaccac gaccagggcc cgcctcagaa atgcgagccc 3420
cagcccgcca acgatgcccg atacaaggcg gcgccgacca agggcaccct agagtcgccg 3480
ggcggcagca aggagcgccc cacaactatg gaggaaacct aatccaactc ctccatcaac 3540
cccaagaaca tcctccacgg cagcaccgtc gacaactgac atcaactcct aaccggtggc 3600
tgcccaacct ctcccctctc cggcactttg cgttttgctg aagattgcag catctgcagt 3660
tcctttttatc cctgattttc tgacttggat atttactagt gtgcgatgga atatcacaac 3720
ataatgagtt gcacaattag gtgagcagag ttgtgtcaaa gtatctgaac tatctgaagt 3780
atctgaacta ctttattctc tcgaattgta ttacaaacat ttgaagtatt tttagtgaca 3840
ttatgttcta acattgtcaa gataatttgt tacaacatat aaggtaccac ctgaagcagt 3900
gactgagatt gccactgtga tgacagaact gttttataac atttatcatt gaaacctgga 3960
ttgcaacagg aatataatga ctgtaacaaa aaaattgttg attatcttaa aaatgcaaat 4020
tgtaatcaga tgtgtaaaat tggtaattac ttctgtacat taaatgcata tttcttgata 4080
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaagcgg cccgacagca acgg        4134
```

<210> 18
<211> 199
<212> PRT
<213> Dogfish Shark

<400> 18
```
Leu Thr Ile Phe Ala Val Leu Gly Ile Leu Ile Thr Ser Phe Val Leu
 1               5                  10                  15
Gly Val Phe Ile Lys Phe Arg Asn Thr Pro Ile Val Lys Ala Thr Asn
            20                  25                  30
Arg Glu Leu Ser Tyr Leu Leu Leu Phe Ser Leu Ile Cys Cys Phe Ser
        35                  40                  45
Ser Ser Leu Ile Phe Ile Gly Glu Pro Arg Asp Trp Thr Cys Arg Leu
    50                  55                  60
Arg Gln Pro Ala Phe Gly Ile Ser Phe Val Leu Cys Ile Ser Cys Ile
65                  70                  75                  80
Leu Val Lys Thr Asn Arg Val Leu Leu Val Phe Glu Ala Lys Ile Pro
                85                  90                  95
Thr Ser Leu His Arg Lys Trp Val Gly Leu Asn Leu Gln Phe Leu Leu
            100                 105                 110
Val Phe Leu Cys Ile Leu Val Gln Ile Val Thr Cys Ile Ile Trp Leu
            115                 120                 125
Tyr Thr Ala Pro Pro Ser Ser Tyr Arg Asn His Glu Leu Glu Asp Glu
            130                 135                 140
Val Ile Phe Ile Thr Cys Asp Glu Gly Ser Leu Met Ala Leu Gly Phe
145                 150                 155                 160
Leu Ile Gly Tyr Thr Cys Leu Leu Ala Ala Ile Cys Phe Phe Phe Ala
            165                 170                 175
Phe Lys Ser Arg Lys Leu Pro Glu Asn Phe Asn Glu Ala Lys Phe Ile
            180                 185                 190
Thr Phe Ser Met Leu Ile Phe
            195
```

<210> 19
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> 23-mer peptide

<400> 19
Ala Asp Asp Asp Tyr Gly Arg Pro Gly Ile Glu Lys Phe Arg Glu Glu
 1   5   10   15
Ala Glu Glu Arg Asp Ile Cys
            20

<210> 20
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide

<400> 20
Asp Asp Tyr Gly Arg Pro Gly Ile Glu Lys Phe Arg Glu Glu Ala Glu
 1   5   10   15
Glu Arg Asp Ile Cys Ile
            20

<210> 21
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide

<400> 21
Ala Arg Ser Arg Asn Ser Ala Asp Gly Arg Ser Gly Asp Asp Leu Pro
 1   5   10   15
Cys

<210> 22
<211> 28
<212> DNA
<213> Artifical sequence

<220>
<223> primer

<223> K=T OR G
      Y=C OR T
      R=A OR G

<400> 22
tgtcktggac ggagccctty ggratcgc   28

<210> 23
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<223> K=T OR G
      Y=C OR T
      R=A OR G

<400> 23
ggckggratg aargakatcc aracratgaa g   31